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EXAMINER				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/573,848

Applicant(s)

STOLL ET AL.

Examiner

RIP A. LEE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6, 8-15, 17, and 29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6, 8-15, 17, and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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DETAILED ACTION

This office action follows a response filed on April 15, 2008. Claims 6 and 8-12 were amended. Claims 1-5, 7, 16, and 18-28 were canceled, and new claim 29 was added. Claims 6, 8-15, 17, and 29 are pending.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 8 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Handa *et al.* (U.S. 6,299,801) in view of evidence furnished in Funaoka *et al.* (WO 00/20492; equivalent U.S. 6,824,865 relied upon for translation).

Handa *et al.* discloses polyolefin compositions for making a thermistor containing two types of polyethylenes, low molecular weight organic compound for control and optimization of operating temperature, and conductive nickel particles. Low molecular weight compounds have a molecular weight of up to 2000, and preferably, up to 1000 g/mole (col. 13, line 24). Representative low molecular weight compound having molecular weight of 1000 g/mole is polyethylene wax commercially available as Mitsui HighWax 110 (Handa *et al.*, col. 14, line 5; see Funaoka *et al.*, col. 11, line 27 for supporting information). Fatty acid amide such as steric amide (*i.e.*, stearamide) is also recommended. Handa *et al.* teaches use of dibenzylidene sorbitol (compound (I-1) of claims) for use as nucleating agent; see col. 19, line 13. The prior art also teaches incorporation of an antioxidant such as Irganox MD 1024 (compound (II-1) of claims) as preventative of harmful effects of metals; see col. 19, line 24.

While it is not clear from the disclosure how the cited polyethylene wax was prepared, it is noted that the terms, "high pressure polyethylene wax," "Ziegler-Natta polyethylene wax," and "metallocene polyethylene wax," are presented essentially in product-by-process form. It is well settled that where product by process claims are rejected over a prior art product that appears to

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be the same, the burden is shifted to the Applicant to establish an unobviousness difference, even if the production processes are different. Furthermore, the patentability of a product claim rests on the product formed, not on the method by which it was produced. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

The working examples show use of compositions containing thermoplastic matrix and wax, but there are no examples of compositions containing nucleating agent and stabilizer. However, it would have been obvious to one having ordinary skill in the art to incorporate nucleating agent in manufacture of molded thermistor element in order to facilitate crystallization of polyolefin, thereby allowing for rapid formation of the article upon cooling. One having ordinary skill in the art would have found it obvious to use Irganox MD 1024 stabilizer in manufacture of a thermistor because the thermistor contains nickel particles. It also would have been obvious to one of ordinary skill in the art to use polyethylene wax or stearamide as the low molecular weight component because Handa *et al.* clearly teaches use of these materials and that the appropriate low molecular weight organic compound may be selected for control and optimization of operating temperature of the thermistor. In summary, it would have been obvious to having ordinary skill in the art to make a thermistor by incorporating into the polymer resin an additive mixture of Mitsui HighWax 110 polyethylene wax, dibenzylidene sorbitol, and Irganox MD 1024 or an additive mixture of stearamide, dibenzylidene sorbitol, and Irganox MD 1024 based on the disclosure of Handa *et al.* Since these materials are essentially the same as that recited in the instant claims, it is obvious that the processability of the polymer will be improved, as recited in claim 29.

3. Claims 12-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Handa *et al.* in view of evidence furnished in Funaoka *et al.*, as applied to claims 8 and 29 above, and further in view of Yoshinari *et al.* (U.S. 6,842,103).

The discussion of the disclosures of Handa *et al.* from the previous paragraph of this office action is incorporated here by reference. Handa *et al.* teaches polyolefin for use as the thermoplastic polymer for preparing inventive thermistors and contemplates copolymer

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composed of monomer units derived from two or more olefins (e.g., ethylene, propylene); col. 8, line 36. Polyethylene is the preferred material; the inventors do not recite specifically use of polypropylene polymer for practicing the invention. At the time the instant invention was made, use of polypropylene in manufacture of organic thermistors was well known in the art. Yoshinari *et al.* discloses thermoplastic polyolefins for making organic thermistors include polypropylene homopolymer and copolymer of polypropylene with alpha olefins. The alpha olefins are ethylene, 1-butene, 1-pentene, 1-hexene, and -octene (col. 7, lines 5-20). It would have been obvious to one having ordinary skill in the art to make a thermistor from polypropylene homopolymer or propylene copolymer because Yoshinari *et al.* teaches these well known species of the genus of polyolefin disclosed in Handa *et al.*, one having ordinary skill in the art would have expected all species within the genus to produce a useful product. In summary, it would have been obvious to one having ordinary skill in the art to make a propylene based organic thermistor containing the three additives elucidated in the previous paragraph. Since these materials are essentially the same as that recited in the instant claims, it is obvious that the polymer will be clarified, as recited in claim 17. With respect to claim 15, Yoshinari *et al.* teaches that ethylene-based copolymer contains 75-99 wt % of units derived from ethylene. While the reference does not disclose propylene content for the propylene copolymer, it would have been obvious, from the example shown for ethylene-based polymer, to make analogous propylene-based copolymer containing 75-99 wt % of units derived from propylene.

4. Claims 6, 8-15, 17, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCullough (EP 911 365).

The prior art of McCullough relates to preparation of propylene copolymers of high clarity by addition of well known clarifying agents such as dibenzylidene sorbitol, *bis(p-methylbenzylidene)sorbitol* or *bis(3,5-dimethylbenzylidene)sorbitol* (compounds (I-1), (I-2), and (I-3) of claims, respectively); see title and paragraph [0013]. Compositions also contain a primary antioxidant for providing long term stability to the product and a secondary antioxidant for providing stability during melt processing. A preferred primary antioxidant is 1,2-*bis*(3,5-di-*t*-butyl-4-hydroxyhydrocinnamoyl)hydrazine (compound (II-1) of instant claims); see paragraph

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[0015]). Conventional fatty acid amide lubricants such as stearamide, oleamide, and erucamide are used as a mold release agent for manufacture of molded articles [0014], line 43. One having ordinary skill in the art would have found it obvious to make a propylene composition containing the combination of dibenzylidene sorbitol, 1,2-*bis*(3,5-di-*t*-butyl-4-hydroxyhydrocinnamoyl)hydrazine, and stearamide from the disclosure of McCullough. The person of ordinary skill in the art practicing the invention of McCullough would have found it obvious to use dibenzylidene sorbitol because use of this key component achieves molded articles of high clarity. The skilled artisan also would have found it obvious to incorporate a mold release agent because inventive compositions are used for manufacture of molded articles (paragraph [0022]). McCullough clearly teaches 1,2-*bis*(3,5-di-*t*-butyl-4-hydroxyhydrocinnamoyl)hydrazine as primary antioxidant from a very limited set of primary antioxidant, and although McCullough does not show examples of compositions containing this compound, one of ordinary skill in the art would have found it obvious to use 1,2-*bis*(3,5-di-*t*-butyl-4-hydroxyhydrocinnamoyl)hydrazine as primary antioxidant in a predictable manner with the reasonable expectation that this confers thermal stability to the polymer composition. *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-741, 82 USPQ2d 1385, 1396 (2007). Therefore, it is maintained that one having ordinary skill in the art would have found it obvious to use the combination of additives recited in claim 6 for making the propylene composition of claim 12. Since these additives are essentially the same as that recited in the instant claims, it is obvious that the clarity and processability of the polymer will be improved, as recited in claims 17 and 29.

Regarding claims 8-10, McCullough discloses other primary antioxidant such as *tetrakis*(methylene-3-(3,5-di-*t*-butyl-4-hydroxyhydrocinnamate)methane (compound (III-d) of claims), commercially available as Irganox 1010; paragraph [0034] and [0015]. One having ordinary skill in the art would have found it obvious to use a combination of antioxidant, 2-*bis*(3,5-di-*t*-butyl-4-hydroxyhydrocinnamoyl)hydrazine and Irganox 1010, in order to enhance thermal stability of the polypropylene product, and since each member of the combination is known individually to function as antioxidant, the person with ordinary skill in the art would have expected such a combination of antioxidant to work. *In re Kerkhoven*, 205 USPQ 1069, 1072 (CCPA 1980); *In re Lindner*, 173 USPQ 356, 359 (CCPA 1972). *In re Susi*, 440 F.2d 442,

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445, 169 USPQ 423, 426 (CCPA 1971). With respect to claim 11, one having ordinary skill in the art would have found it obvious to use phosphite secondary antioxidant to confer stability during melt processing because this is clearly taught in paragraph [0014] of the prior art. The subject matter of claims 13-15 is obvious over McCullough. The impact copolymer contains 40-90 wt % of propylene homopolymer (paragraph [0006]) and 10-60 wt % of propylene-ethylene random copolymer (paragraph [0009]).

5. Claims 6, 12-15, 17 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. 6,469,088) in view of McCullough.

Lee discloses a propylene polymer composition containing dibenzylidene sorbitol, and *N,N'*-bis(3-(3',5'-di-*t*-butyl-4'-hydroxyphenyl)propionyl)hydrazine (compounds (I-1) and (II-1) of claims, respectively); see col. 10, lines 10-45. The inventors recommend use of processing aid, but there is no teaching of what said processing aid entails. McCullough discloses fatty acid amide lubricants such as stearamide, oleamide, and erucamide are used as a mold release agent for manufacture of molded articles [0014], line 43. The combination of references would have suggested to one having ordinary skill in the art to use a mold release agent in compositions of Lee because the inventive compositions are used for making molded articles. One of ordinary skill in the art would have been motivated to use mold release agent to prevent resin from sticking to molding apparatus, thereby improving processing. Therefore, it would have been obvious to one having ordinary skill in the art to make the composition of claims 6 and 12 by incorporating stearamide as mold release agent in the composition of Lee for the purpose of improving processing. The combination is obvious because Lee contemplates use of processing aid, and McCullough teaches the otherwise obvious missing element.

The subject matter of claims 13-15 is obvious over Lee. The inventive composition is an impact copolymer containing a blend of propylene homopolymer and propylene-ethylene random copolymer (col. 9, lines 55-57). The ratio of homopolymer to random copolymer is 5:1 with the ethylene content of the copolymer set at 20-65 wt % (col. 4, lines 34 and 63). Since these additives are essentially the same as that recited in the instant claims, it is obvious that the clarity and processability of the polymer will be improved, as recited in claims 17 and 29.

Response to Arguments

6. The rejection of claims under 35 U.S.C. 102(c) as being anticipated by Lee (U.S. 6,469,088), set forth in the previous office action dated December 12, 2007, has been overcome by amendment.

The rejection of claims 18-24 under 35 U.S.C. 102(b) as being anticipated by Matthijs *et al.* (WO 02/14045) no longer apply due to cancellation of cited claims.

The rejection of claims under 35 U.S.C. 102(b) as being anticipated by Handa *et al.* (U.S. 6,299,801) has been withdrawn; new grounds of rejection based on amended claims have been presented in paragraphs 2 and 3 of this office action.

Applicant submits that Handa *et al.* provides a list of hundreds upon hundreds of possible combination of additives and that there is no suggestion which would guide a skilled artisan to the present three component additive mixture. Applicant's argument, however, is not persuasive. As elucidated in paragraph 2, Handa *et al.* teaches a thermistor comprising a polymer composition necessarily containing a polyethylene wax or stearamide component for controlling operating temperature. Contrary to Applicant's suggestion of a laundry list of additive, Handa *et al.* teaches in sequential manner specific utility for individual additives which are pertinent to manufacture of the thermistor. One of ordinary skill in the art would have found it obvious to use dibenzylidene sorbitol (disclosed by Handa *et al.* as nucleating agent) in manufacture of molded thermistor element in order to facilitate crystallization of polyolefin, thereby allowing for rapid formation of the article upon cooling. One having ordinary skill in the art would have found it obvious to use Irganox MD 1024 stabilizer (disclosed by Handa *et al.* for conferring stability of polymer in presence of metals) in manufacture of a thermistor because the thermistor contains nickel particles. The selection of a known material based on its suitability for its intended use supports *prima facie* obviousness. *Sinclair & Carroll Co vs. Interchemical Corp.* 325 U.S. 327, 65 USPQ 297 (1945). Moreover, the combination of known elements according to known methods to yield predictable results is well within the level of skill, and thus obvious, to one having ordinary skill in the art. In light of these considerations, it is maintained that it would

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have been obvious to having ordinary skill in the art to make the claimed invention based on the disclosure of Handa *et al.*

Applicant traverses the rejection of claims over McCullough, indicating that the disclosure is not limited enough to direct a skilled artisan to the three component mixture. Applicant's argument, however, is not persuasive. As elucidated in paragraph 4, compositions of McCullough necessarily contain dibenzylidene sorbitol and substituted variants thereof for achieving clarity. The reference also teaches use of fatty acid amide as processing aid, which one of skill in the art would be motivated to use since compositions are used for making molded articles. The skilled artisan also would have found it obvious to use 1,2-*bis*(3,5-di-*t*-butyl-4-hydroxyhydrocinnamoyl)hydrazine as primary antioxidant because McCullough teaches this compound within a limited set of primary antioxidant. Since each type of component is known to confer specific property to the polypropylene composition, one having ordinary skill in the art would have found it obvious to make a composition with these three additives. The selection of a known material based on its suitability for its intended use supports *prima facie* obviousness. *Sinclair & Carroll Co vs. Interchemical Corp.* 325 U.S. 327, 65 USPQ 297 (1945). Moreover, the combination of known elements according to known methods to yield predictable results is well within the level of skill, and thus obvious, to one having ordinary skill in the art. In light of these considerations, it is maintained that it would have been obvious to having ordinary skill in the art to make the claimed invention based on the disclosure of McCullough.

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Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu S. Jagannathan, can be reached at (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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July 16, 2008

/VASUDEVAN S. JAGANNATHAN/

Supervisory Patent Examiner, Art Unit 1796

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